



PTO/SB/21 (08-03)

Approved for use through 08/30/2003. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**TRANSMITTAL  
FORM**

(to be used for all correspondence after initial filing)

Application Number 10/649,381

Filing Date 08/27/2003

First Named Inventor Aghajanian, Michael K.

Art Unit 3641

Examiner Name

Total Number of Pages in This Submission

7

Attorney Docket Number M-104-D

**ENCLOSURES (Check all that apply)**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Fee Transmittal Form                                | <input type="checkbox"/> Drawing(s)                                       | <input type="checkbox"/> After Allowance communication to Technology Center (TC)        |
| <input type="checkbox"/> Fee Attached  | <input type="checkbox"/> Licensing-related Papers                         | <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences     |
| <input type="checkbox"/> Amendment/Reply                                     | <input type="checkbox"/> Petition   | <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) |
| <input type="checkbox"/> After Final   | <input type="checkbox"/> Petition to Convert to a Provisional Application | <input type="checkbox"/> Proprietary Information  |
| <input type="checkbox"/> Affidavits/declaration(s)                           | <input type="checkbox"/> Power of Attorney, Revocation                    | <input type="checkbox"/> Status Letter  |
| <input type="checkbox"/> Extension of Time Request                           | <input type="checkbox"/> Change of Correspondence Address                 | <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):         |
| <input type="checkbox"/> Express Abandonment Request                         | <input type="checkbox"/> Terminal Disclaimer                              | (1) Certificate of Mailing  |
| <input checked="" type="checkbox"/> Information Disclosure Statement         | <input type="checkbox"/> Request for Refund                               | (2) Return Receipt Postcard   |
| <input type="checkbox"/> Certified Copy of Priority Document(s)              | <input type="checkbox"/> CD, Number of CD(s) _____                        |   |
| <input type="checkbox"/> Response to Missing Parts/Incomplete Application    |   |   |
| <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53 |   |   |

Remarks

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**

Firm or Individual name	Jeffrey R. Ramberg Reg. No. 34,700
Signature	
Date	03/13/2004

**CERTIFICATE OF TRANSMISSION/MAILING**

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Typed or printed name	Jeffrey R. Ramberg
-----------------------	--------------------

Signature

Date 03/13/2004

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/649,381                      Group Art Unit: 3641  
Filing Date: August 27, 2003                      Attorney Docket No.: M-104-D  
First Named Inventor: Aghajanian, Michael K.  
Title: Ceramic-rich Composite Armor, and Methods for Making Same

---

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Certificate of Mailing Under 37 CFR §1.8

Dear Sir:

I hereby certify that the following correspondence is being deposited on the date indicated below with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: *Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450*:

Information Disclosure Statement, incl. Form PTO-1449

Transmittal

Return Receipt Postcard

03/13/2004  
Date

Jeffrey R. Ramberg  
Signature

Jeffrey R. Ramberg  
Typed or printed name of person signing Certificate



**PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/649,381                      Group Art Unit: 3641  
Filing Date: August 27, 2003                      Attorney Docket No.: M-104-D  
First Named Inventor: Aghajanian, Michael K.  
Title: Ceramic-rich Composite Armor, and Methods for Making Same

---

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**INFORMATION DISCLOSURE STATEMENT**

Dear Sir:

Pursuant to 37 C.F.R. §1.56, applicants hereby call the attention of the U.S. Patent and Trademark Office to the references listed on the attached Form PTO-1449. The present application is a Continuation-in-Part of U.S. Patent Application Serial No. 10/286,405, filed on November 1, 2002, which in turn is a Divisional of U.S. Patent Application Serial No. 09/757,826, filed on January 10, 2001. Pursuant to 37 C.F.R. §1.98(d), applicants attach one copy of each reference so listed but not previously supplied to the Office in any parent application. If the Office is unable to locate a previously submitted reference, applicants can easily furnish a replacement copy to the Office upon request.

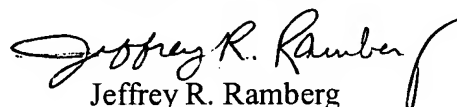
Applicants present these references to the U. S. Patent and Trademark Office because the Office may deem the references to be material to patentability. Applicants respectfully request that these references be expressly considered during the prosecution of this application and be made of record herein and appear on the "References Cited" section on any patent to issue herefrom.

Pursuant to 37 C.F.R. §1.98(a)(3)(i), applicants respectfully submit that German Patent Publication No. DE 30 05 586 A1 discloses an armor plate, especially suitable for military tanks and similar vehicles, and the method of its manufacture. Specifically, in the preferred embodiment, a preform containing a carbon source and silicon powder is dry pressed, carbonized at 800C in argon to make a 10 by 10 by 1 cm panel, and then heated in argon to 1600C. The panel is then immersed in a pool of chrome-nickel steel at 1600C, which is then pressurized using argon at 20 bars pressure to complete the infiltration. The infiltrated panel is then withdrawn from the melt and cooled.

Similarly, German Patent Publication No. DE 197 11 831 discloses a melt-infiltrated fiber reinforced ceramic composite material having highly heat resistant fibers, in particular, based on Si/C/B/N, which are bonded by means of a silicon-based matrix. The silicon melt, used for the infiltration, contains at a minimum, additives of iron, but may also contain additives of chromium, titanium, molybdenum, nickel or aluminum. A silicon melt containing about 5 to 50 wt% of iron and about 1 to 10 wt% of chromium is especially preferred. The result is a simplified production method relative to the known art, and improved characteristics of the formed composite ceramic material.

Should the Examiner have any questions regarding any aspect of the present submission, the Examiner is invited to telephone applicants' undersigned representative.

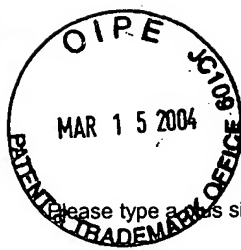
Respectfully submitted,

  
Jeffrey R. Ramberg  
Reg. No. 34,700

March 13, 2004

c/o M Cubed Technologies, Inc.	Tel: (302) 454-8600 ext. 319
1 Tralee Industrial Park	Fax: (302) 454-8605
Newark, DE 19711	

Enclosures: Form PTO-1449 w/ one copy of each listed reference not previously submitted



Please type a plus sign (+) inside this box →



PTO/SB/08A (10-96)

Approved for use through 10/31/99. OMB 0651-0031

Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

<b>Substitute for form 1449A/PTO</b>  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)				<b>Complete if Known</b>	
				Application Number	10/649,381
				Filing Date	August 27, 2003
				First Named Inventor	Aghajanian, Michael K.
				Group Art Unit	3641
				Examiner Name	
Sheet	1	of	3	Attorney Docket Number	M-104-D

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup>			
		3,205,043		Taylor	09-07-1965	
		3,275,722		Popper	09-27-1966	
		3,495,939		Forrest	02-17-1970	
		3,725,015		Weaver	04-03-1973	
		3,796,564		Taylor et al.	03-12-1974	
		3,857,744		Moss	12-31-1974	
		3,859,399		Bailey et al.	01-07-1975	
		3,951,587		Alliegro et al.	04-20-1976	
		3,998,646		Weaver	12-21-1976	
		4,019,913		Weaver et al.	04-26-1977	
		4,104,062		Weaver	08-01-1978	
		4,154,787		Brown	05-15-1979	
		4,692,418		Boecker et al.	09-08-1987	
		4,693,988		Boecker et al.	09-15-1987	
		4,868,040		Hallal et al.	09-19-1989	
		4,876,941		Barnes et al.	10-31-1989	
		4,944,904		Singh et al.	07-31-1990	
		5,094,901		Gray	03-10-1992	
		5,205,970		Brun et al.	04-27-1993	

FOREIGN PATENT DOCUMENTS							
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup>			
		WO	00/062007	A2	Textron Systems Corp.	10-19-2000	

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).

<sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



Please type and sign (+) inside this box → ☐

PTO/SB/08A (10-96)

Approved for use through 10/31/99. OMB 0651-0031  
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449A/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)				<b>Complete if Known</b>	
				Application Number	10/649,381
				Filing Date	August 27, 2003
				First Named Inventor	Aghajanian, Michael K.
				Group Art Unit	3641
Examiner Name					
Sheet	2	of	3	Attorney Docket Number	M-104-D

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup>			
		5,372,978		Ezis	12-13-1994	
		5,571,758		Grossman	11-05-1996	
		5,840,221		Lau et al.	11-24-1998	
		5,955,391		Kameda et al.	09-21-1999	
		5,962,103		Luthra et al.	10-05-1999	
		6,074,750		Brun et al.	06-13-2000	
		6,245,424	B1	Lau et al.	06-12-2001	
		US2003/0110931	A1	Aghajanian et al.	06-19-2003	
		6,609,452	B1	McCormick et al.	08-26-2003	

FOREIGN PATENT DOCUMENTS								
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup>				
		DE	30 05 586	A1	Dias et al.	08-20-1981		
		WO	82/01545	A1	UK Atomic Energy Authority	05-13-1982		
		WO	98/42634	A1	Daimler-Benz	09-24-1998		

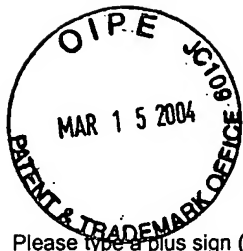
Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).

<sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



Please type a plus sign (+) inside this box → ☐

PTO/SB/08A (10-96)

Approved for use through 10/31/99. OMB 0651-0031  
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)				<b>Complete if Known</b>	
				Application Number	10/649,381
				Filing Date	August 27, 2003
				First Named Inventor	Aghajanian, Michael K.
				Group Art Unit	3641
Examiner Name					
Sheet	3		3	Attorney Docket Number	M-104-D

<b>OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS</b>			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>1</sup>
		DENNIS J. VIECHNICKI, MICHAEL J. SLAVIN and MORTON I. KLIMAN, "Development and Current Status of Armor Ceramics", <i>Ceramic Bulletin</i> , vol. 70, no. 6, pp. 1035-39 (1991).	
		D. VIECHNICKI, W. BLUMENTHAL, M. SLAVIN, C. TRACY, and H. SKEELE, "Armor Ceramics - 1987", pp. 27-53, presented at Third TACOM Armor Coordinating Conference, February 17-19, 1987, Monterey, California.	
		ROY C. LAIBLE, "Ceramic Composite Armor", in <i>Ballistic Materials and Penetration Mechanics</i> , pp. 150-1, Elsevier Scientific Publishing Co., (1980).	
		"Reaction-Bonded Silicon Carbide", <i>Ceramics and Glasses Handbook</i> , p. 293, American Society for Materials, Materials Park, OH (1990).	
		C.W. FORREST, P. KENNEDY, and J.V. SHENNAN, "The Fabrication and Properties of Self-Bonded Silicon Carbide Bodies", <i>Special Ceramics 5</i> , pp. 99-123 (1972).	
		ALEKSANDER J. PYZIK, P. DOULGLAS WILLIAMS, and ANN McCOMBS, "New Low Temperature Processing for Boron Carbide/Aluminum Based Composite Armor", Final Report to U.S. Army Research Office under Contract No. DAAL 03-88-C-0030, June 1, 1990.	

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).

<sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.